JOURNAL OF APPLIED BEHAVIOR ANALYSIS 1977, 10, 341-344 NUMBER 2 (SUMMER) 1977

ASSESSING THE READABILITY OF THIRTY-NINE BEHAVIOR-MODIFICATION TRAINING MANUALS AND PRIMERS

FRANK ANDRASIK[1] AND WILLIAM D. MURPHY

OHIO UNIVERSITY AND MENDOTA MENTAL HEALTH INSTITUTE MADISON, WISCONSIN

Thirty-nine behavior-modification training manuals and primers, sampling various topical areas, were subjected to a readability analysis. Reading-ease scores were computed by the formula developed by Flesch. The texts sampled ranged from very difficult (appropriate for college graduates) to fairly easy (appropriate for readers at the seventh-grade level).

DESCRIPTORS: training manuals, inservice training, parents, attendants, nurses, paraprofessionals, nonprofessionals

The increasing popularity of behavior modification, paralleled by the expanding reliance on subprofessionals, has stimulated the publication of numerous training manuals and primers on the general topic of behavior modification. Behavioral training texts have also appeared for specific topic areas, such as toilet training, behavioral contracting, social behavior, and classroom control. One measure of the usefulness of these behavioral texts is the extent to which they are readable by the intended consumers. This is an important consideration, for a number of studies have shown that level of readability is an important factor in readership and reader perseverance, *i.e.*, how much material a reader is likely to read (Klare and Smart, 1973; Ludwig, 1949; Murphy, 1947*a, b;* Schramm, 1947; Swanson, 1948). While this information should be of obvious value to teachers and trainers, it should also be of value to researchers developing new roles for both professionals and subprofessionals in this rapidly changing field.

To date, the readability of the many available behavioral training texts has received little attention. Recently, two studies (Andrasik, Klare, and Murphy, 1976; Arkell, Kubo, and Meunier, 1976) have appeared that provide readability data for nine behavior-management texts frequently recommended to parents. A third and somewhat related study has also appeared, which has rated college undergraduate and graduate behavior-therapy texts (Kendall, Finch, and Gillen, 1976). The distinction between college texts and training texts is, at advanced training levels, somewhat arbitrary. The present authors consider five of the texts rated by Kendall *et al.* 1976 to be suitable for training purposes; hence, mention is made here. However, no such data are currently available for training texts targeted for other subprofessional groups nor for texts devoted to other topical areas. The present paper presents readability data for a more extensive sampling of the currently available behavioral-training texts.

Methods of Assessing Readability

Several methods are available for determining readability of a specific text (Klare, 1974-75). The first is for the respective trainer to estimate the readability of the text (from a brief sampling of selected passages from the text, feedback from other trainers, *etc.*). A second, and more accurate, method is directly to test reader comprehension after presenting the text to a wide range of readers with differing skill levels. Both of the above mentioned methods require reader experience with the text, and, hence, are very time consuming (especially so for the latter case). To keep pace with the rapid publication rate of such training texts, a third procedure is needed. This third technique is to subject the text to a readability analysis that uses standardized and tested formulae. Readability formulae use common language variables, such as sentence length, syllable counts, and word difficulty, to provide an index of a text's probable reading difficulty. No attempt is made in the present paper to survey the many existing formulae for determining readability. An excellent, comprehensive (and up to date) review may be found in Klare (1974-75). Methodological concerns when using the various readability formulae have been previously outlined in Andrasik, *et al.* 1976 and are not therefore presented here.

Utility of Readability Analyses

Most formulae provide reading grade level scores. These indicate the level of difficulty that can be read comfortably and with adequate comprehension by

[1]The authors wish to express appreciation to G. R. Klare for his assistance with the data analysis and invaluable comments on earlier drafts and to J. R. McNamara for his comments on earlier drafts. Reprints may be obtained from Frank Andrasik, Department of Psychology, Ohio University, Athens, Ohio 45701.

readers who are in that school grade or have finished that level of education. Other variables, however, complicate this seemingly straightforward judgement (both within-reader variables, such as differential interest, reading competence, and reading time; and within-text variables, such as page length, programmed *versus* nonprogrammed features, number and relevance of examples, humorous content, and so on). For example, readability scores tend to underestimate a text's difficulty for readers lacking sufficient motivation. Similarly, for highly motivated readers, readability scores tend to overestimate a text's difficulty. A good approach is to consider readability scores as a general guide, accurate only within about one grade level on either side of the analyzed level and only for the typical reader. Furthermore, readability scores are most meaningful up to about high school or beginning college level. Beyond that point, the reader's special background knowledge is often more important than the difficulty of the text.

Flesch Reading-Ease Formula

The Flesch Reading-Ease formula (Flesch, 1948; 1949) was selected for the present investigation because of its reliability, validity, and ease of use (Klare, 1963; 1974-75). Flesch's Reading-Ease score is determined by first computing average sentence length and syllable count for selected passages from the text. Insertion of these values into Flesch's Reading-Ease formula yields a Reading-Ease score ranging from 0, practically unreadable, to 100, easy for any literate person. The 100 scale points are further grouped into seven categories of difficulty, each with a corresponding reading grade level: 0-30, college graduate; 30-50, thirteenth to sixteenth grade; 50-60, tenth to twelfth grade; 60-70, eighth to ninth grade; 70-80, seventh grade; 80-90, sixth grade; and 90-100, fifth grade. To facilitate analysis, Farr and Jenkins (1949) prepared a table that allows a rapid determination of Flesch's Reading Ease.

Table 1

Estimated reading grade levels for 39 behavior-modification training manuals and primers.

Text[a]	*Flesch Reading Grade Level*
Becker, W. C. *Parents are teachers: A child management program.* Champaign, Ill.: Research Press, 1971.	7
Azrin, N. H. and Foxx, R. M. *Toilet training in less than a day.* New York: Simon and Schuster, 1974.	8-9
Brackway, S. B. *Training in child management: A family approach.* Dubuque, Iowa: Kendall/Hunt, 1974.	
Carter, R. D. *Help! These kids are driving me crazy.* Champaign, Ill.: Research Press, 1972.	
De Risi, W. J. and Butz, G. *Writing behavioral contracts.* Champaign, Ill.: Research Press, 1975.	
Krumboltz, J. D. and Krumboltz, H. B. *Changing children's behavior.* Englewood Cliffs, N.J.: Prentice-Hall, 1972.	
Patterson, G. R. *Families: Applications of social learning to family life.* Champaign, Ill.: Reseach Press, 1971.	
Patterson, G. R. and Gullion, M. E. *Living with children: New methods for parents and teachers.* Champaign, Ill.: Research Press, 1968.	
Sheppard, W. C., Shank, S. B., and Wilson, D. *Teaching social behavior to young children.* Champaign, Ill.: Research Press, 1973.	
Zifferblatt, S. M. *You can help your child improve study and homework behaviors.* Champaign, Ill.: Research Press, 1970.	
Ackerman, J. M. *Operant conditioning techniques for the classroom teacher.* Glenview, Ill.: Scott, Foresman and Co., 1972.	10-12 (High School)
Deibert, A. N. and Harmon, A. J. *New tools for changing behavior.* Champaign, Ill.: Research Press, 1973.	
Hall, R. V. *Behavior modification: Applications in school and home.* Lawrence, Kans.: H & H Enterprises, Inc., 1971.	
Malott, R. W. *Contingency management.* Kalamazoo, Mich.: Behaviordelia, 1972.	
Morris, R. J. *Behavior modification with children: A systematic guide.* Cambridge, Mass.: Winthrop Publishers, 1976.	
Watson, L. S. *Child behavior modification: A manual for teachers, nurses, and parents.* New York: Pergamon Press, 1973.	

Table 1 *continued*

Text[a]	Flesch Reading Grade Level
Watson, L. S. *How to use behavior modification with mentally retarded and autistic children: Programs for administrators, teachers, parents, and nurses.* Libertyville, Ill.: Behavior Modification Technology, 1972.	
Blackham, G. L. and Silberman, A. *Modification of child behavior.* Belmont, Calif.: Wadsworth, 1971.	13-16 (College)
Bootzin, R. R. *Behavior modification and therapy: An introduction.* Cambridge, Mass.: Winthrop, 1975.	
Buckley, N. K. and Walker, H. M. *Modifying classroom behavior: A manual of procedure for classroom teachers.* Champaign, Ill.: Research Press, 1970.	
Foxx, R. M. and Azrin, N. H. *Toilet training the retarded: A rapid program for day and nighttime independent toileting.* Champaign, Ill.: Research Press, 1973.	
Givner, A. and Graubard, P. S. *A handbook of behavior modification for the classroom.* New York: Holt, Rinehart & Winston, 1974.	
Hall, R. V. *Behavior modification: Basic principles.* Lawrence, Kans.: H & H Enterprises, Inc., 1971.	
Hall, R. V. *Behavior modification: The measurement of behavior.* Lawrence, Kans.: H & H Enterprises, Inc., 1971.	
Homme, L., Csanyi, A. P., Gonzales, M. A., and Rechs, J. R. *How to use contingency contracting in the classroom.* Champaign, Ill.: Research Press, 1970.	
Knox, D. *Marriage happiness: A behavioral approach to counseling.* Champaign, Ill.: Research Press, 1971.	
Liberman, R. P. *A guide to behavioral analysis and therapy.* New York: Pergamon Press, 1972.	
Loomis, M. E. and Horsley, J. A. *Interpersonal change: A behavioral approach to nursing practice.* New York: McGraw-Hill, 1974.	
Meacham, M. L. and Wiesen, A. E. *Changing classroom behavior.* 2nd ed.; New York: Intext Educational Publishers, 1974.	
Mink, O. G. *The behavior change process.* New York: Harper and Row, 1970.	
Sarason, I. G., Glaser, E. M., and Fargo, G. A. *Reinforcing productive classroom behavior: A teacher's guide to behavior modification.* New York: Behavioral Publications, 1972.	
Schaefer, H. H. and Martin, P. L. *Behavioral Therapy.* 1st ed.; New York: McGraw-Hill, 1969.	
Schaefer, H. H. and Martin, P. L. *Behavioral Therapy.* 2nd ed.; New York: McGraw-Hill, 1975.	
Walker, H. M. and Buckley, N. K. *Token reinforcement techniques: Classroom applications for the hard-to-teach child.* Eugene, Ore.: E-B Press, 1974.	
Mikulas, W. L. *Behavior modification: An overview.* New York: Harper and Row, 1972.	College Graduate
Reynolds, G. S. *A primer of operant conditioning.* Glenview, Ill.: Scott, Foresman, and Co., 1968.	
Sherman, A. R. *Behavior modification: Theory and practice.* Monterey, Calif.: Brooks/Cole, 1973.	
Wenrich, W. W. *A primer of behavior modification.* Belmont, Calif.: Brooks/Cole, 1970.	
Williams, J. L. *Operant learning: Procedures for changing behavior.* Monterey, Calif.: Brooks/Cole, 1973.	

[a]Texts are arranged in alphabetical order (by first author's last name) within each respective difficulty level.

Procedure

For the present investigation, 39 training manuals and primers were selected to cover a range of problematic behaviors and a range of target staff members. Fourteen of the 39 texts have been previously rated (Andrasik, *et al.*, 1976; Arkell *et al.*, 1976; Kendall *et al.*, 1976 but are presented here for convenience to the reader. To apply Flesch's formula, 100-word samples were taken from each text, approximately every 10 pages of printed material, with at least one sampling from each chapter. The number of

samples per text varied from five to 24, depending on the length of the text. After computing the average sentence length and syllable count per text, Reading-Ease scores were obtained from the table prepared by Farr and Jenkins (1949).

RESULTS AND DISCUSSION

Estimated reading grade levels for the 39 texts sampled are presented in increasing order of difficulty in Table 1. The texts are arranged in alphabetical order (by first author's last name) within each respective difficulty level. As can be seen from the table, the range of reading difficulty varies from the seventh grade to college graduate, with scores falling in five of Flesch's seven difficulty categories. This wide range of scores suggests that behavior therapists working with subprofessionals may need to attend more specifically to the readability of materials they provide staff during training.

The preceding analysis is not meant to infer that the text with the lowest reading grade level is necessarily the best text. As previously pointed out, readability should not be used as the sole criterion measure for text selection. Furthermore, a low reading grade level does not guarantee that a text will provide staff with the skills necessary to apply behavior techniques in their respective settings. However, given the wide range of currently available training texts, readability analyses can be beneficial in helping the prospective behavior-modification trainer narrow the range of appropriate texts from which to make a final selection. Although, as stated, a low reading grade level does not guarantee a good training text, it seems safe to say that a text at or somewhat below the reading level of the target population will be read and understood by a greater number of readers than a text rated above the target population's reading level.

REFERENCES

Andrasik, F., Klare, G. R., and Murphy, W. D. Readability and behavior modification texts: Cross-comparisons and comments. *Behavior Therapy,* 1976, **7,** 539-543.

Arkell, R. N., Kubo, H. R., and Meunier, C. P. Readability and parental behavior modification literature. *Behavior Therapy,* 1976, **7,** 265-266.

Farr, J. N. and Jenkins, J. J. Tables for use with the Flesch readability formulas. *Journal of Applied Psychology,* 1949, **33,** 275-278.

Flesch, R. F. A new readability yardstick. *Journal of Applied Psychology,* 1948, **32,** 221-233.

Flesch, R. F. *The art of readable writing.* New York: Harper, 1949.

Kendall, P. C., Finch, A. J., and Gillen, B. Readability and human interest scores as objective aides in behavior therapy text selection. *Behavior Therapy,* 1976, **7,** 535-538.

Klare, G. R. *The measurement of readability.* Ames: Iowa State University Press, 1963.

Klare, G. R. Assessing readability. *Reading Research Quarterly,* 1974-1975, **1,** 62-102.

Klare, G. R. and Smart, K. L. Analysis of the readability level of selected USAFI printed instructional materials. *The Journal of Educational Research,* 1973, **67,** 176.

Ludwig, M. C. Hard words and human interest: Their effects on readership. *Journalism Quarterly,* 1949, **26,** 167-171.

Murphy, D. R. Test proves short words and sentences get best readership. *Printer's Ink,* 1947, **218,** 61-64. (*a*)

Murphy, D. R. How plain talk increases readership 45 per cent to 66 per cent. *Printer's Ink,* 1947, **220,** 35-37. (*b*)

Schramm, W. Measuring another dimension of newspaper readership. *Journalism Quarterly,* 1947, **24,** 293-306.

Swanson, C. E. Readability and readership: A controlled experiment. *Journalism Quarterly,* 1948, **25,** 339-343.

Received 11 November 1975.
(Final acceptance 25 May 1976.)